VOL. XVIII. JANUARY, 1908. NO. 1.

THE MONIST

WILL-FORCE AND THE CONSERVATION OF ENERGY.

THE following essay contains an argument which, I believe, has never yet been stated by any one else—much less refuted. Once I did publish it in the January number of *The Monist* for 1899; but I was completely misunderstood by the Editor, Dr. Paul Carus. My reply to him came late; and was not published. In offering this argument now for publication, I throw down the gauntlet to the whole philosophic world, especially to Prof. Ernst Haeckel of Jena, whose recent famous publication briefly sums up the pronouncements of nineteenth century science on the opposite side.

* * *

To me it has always seemed that there is absolutely no escape from the conclusion that consciousness—or the conscious principle in man and animals—actually does, ever and again, originate energy.

There are two main steps in the argument by which this theory is established.

1. Mind *directs* the motions of matter. This theory has been disputed by some leading intellects, more scientists than philosophers, notably Professor Huxley, who boldly maintained that the mind was a mere spectator of all that occurred around it, and was powerless to interfere. To others, such as Tyndall, the problem has remained a

standing puzzle. But I think most are now gradually coming round to the view that mind does direct the motions of matter. And perhaps what has chiefly led to this is, that without this theory there seems to be no foundation for the ethical idea—ethics ceases to be a science. If all movements are determined by purely mechanical or physical causes there is no room for any question of right or wrong. If all the internal and external movements of animal bodies were entirely independent of consciousness, and would go on just the same if consciousness were not involved, then there is an end of all moral responsibility. Of course this is only an indirect argument. And I think there is no direct proof of the theory. We can only argue, "for if not, if it be possible, suppose that consciousness does not direct motion," and then see if the alternative conclusions thus presented are such as we can swallow. The disappearance of the distinction between right and wrong is one of the first conclusions. Possibly two or three logical fanatics might be found who would not stick even at this. But I think it safe to say that there is not the smallest possibility of any such theory ever becoming more than a curiosity.

Another indirect argument is simply this—can we possibly believe that all that has ever happened and is happening among conscious beings in this world, would have happened and would go on happening exactly the same, if consciousness was not and never had been present. If animals were unconscious creatures would the daily and yearly events of their lives be exactly the same? You can't prove that they would not be by *Barbara* or by anything else. But the fact remains that the alternative conclusion is absurd—what then would be the function of consciousness, what the use of it? None! Well you would never get anybody but a few logical monomaniacs to believe that.

The direct argument is not conclusive. And yet perhaps it is as conclusive as the indirect one. The direct argument is simply—All conscious beings are conscious of controlling events; if this consciousness has no foundation in fact, how do you explain it? And the answer is that it is quite capable of explanation. So long as that which happens is that which we desire, we infer that it is our desire that has brought it about; when it is not what we want, we attribute it to external causes.

But I think there is an answer to that. Reckoning numerically, the vast majority of all the movements of the body which are accompanied by consciousness are just what we desire—unless a man be diseased by paralysis or drunkenness, or catalepsy, or something of that sort, his arms and legs never fail to do the hundreds of little things that he is continually wanting them to do, all day long.

But, it will be said, our actions are the result of ingrained habit—the result of certain tendencies inherent in the physical constitution of the body. And our sense of desiring them is really merely the sense of pleasure that comes from doing what our bodies are especially made to do—the sense of pleasure that always more or less forms part of the performance of any natural and healthy function, or even sometimes of morbid activities that have become habitual.

But that argument can easily be met. Let us rigidly exclude any and all activities that are habitual. Let us select any actions quite arbitrarily—actions, not activities. Think for a moment—"I will move my arm or leg, this way or that," and you find you can do it. Can we possibly attribute each one of these instances to a mere coincidence that the motion of the arm or the leg happened to occur just at the same time as the desire for that motion?.... Really I think this is the strongest argument of all. It is not the direct argument with which we started. The direct

argument, "I desire this movement—this movement occurs—therefore my desire is the cause of it"—may be said to have failed. Because, theoretically, there is an alternative conclusion. But that alternative conclusion presents, surely, the biggest indirect argument—the strongest *reductio ad absurdum*—that it would be possible to find anywhere. If there is a stage at which the probabilities of the indirect form of argument become as good as the certainties of a direct one, it is surely here.

The reply, if any, could only be, that it is only through illusion that the movement appears to follow the desire; and that, as a matter of fact, it is the desire that follows the movement—the desire being, really, a mere consciousness of and pleased acquiescence in the movement. But then, I say, try the experiment as often as you like; determine on the movement a measurable time beforehand, so as to be sure that it is the movement that follows the desire, and not *vice versa*. To which you might perhaps reply, "Again illusion. The desire which appeared to you to determine the movement, was really itself determined by the same unseen, internal, previous causes, which determined the movement."—Well it is a conclusive answer to that argument, if, instead of trying to pre-determine the movement yourself, you let somebody else determine it for you. That effectually eliminates all possibility of illusion. Physiological causes internal in you could not have determined in the other person's mind the choice of what movement you should make.

But besides all that—even when you pre-determine the movement yourself, why suppose illusion? The evidence of our senses is all that we ever have about anything at all. And generally speaking we think it right to accept it. You must then have some especial reason in this case for imagining that there is illusion at work.

And *that* is the point. You have a special reason, all you scientists, for rejecting the evidence of your senses in this case. And that reason is the conservation of energy. That mind can direct the motions of matter appears to you to be the contrary to the theory of the conservation of energy; hence your obstinate objection to the theory of the conscious control of motion.

Now this theory of the conservation of energy is an invention of the day before yesterday. And yet all you scientists will accept any alternative however extraordinary, rather than give it up. You will deny the existence of moral responsibility, and you will believe that all conscious beings are mere machines, and that consciousness is without any function or use in life, which could get on just as well without it, and you will reject the daily experiences of all mankind from the earliest times up to now, and will tax your brains to invent all kinds of extraordinary hypotheses to provide a way out of the difficulties that you yourselves have created out of your adherence to this pet new theory, rather than allow this one exception to it. Such is the pride of intellect!

If anything had to go to the wall, it would be this newfangled theory of the conservation of energy. But I will show later on that you may still keep your theory if you like, though in a somewhat modified form, and may admit the plain evidence of your senses as well.

I think, however, as I said, that the opinion that mind directs the movements of matter, is steadily gaining adherence among men of science to-day. They do not give up the conservation of energy; but they try all sorts of intellectual gymnastics to try and reconcile the two theories.* I hope to make the feat an easier one for them. Meanwhile, after what I have said, I think we are justified

* See Prof. Lloyd Morgan in the October number of *The Monist* for 1896, in an article on "Animal Automatism and Consciousness," about which the less said the better.

in taking the former theory as practically proved. Mind directs the movements of matter.

Now for the next step. How does it do so? Here I issue my challenge:

2. There is one very evident, and very simple way, in which, we can easily see, that mind might direct the movements of matter.

Suppose a certain single, simple movement of a certain material body has been completely pre-determined by certain mechanical causes—that is, by certain previous movements of that and other material bodies; and suppose that after this material body has started on its mechanically predetermined career, some conscious being observing the event suddenly perceives that, from a human point of view, it is a matter of tremendous importance that the motion of that particular material body should receive a certain particular change in direction. What then is the role of consciousness? How can it interfere to avert the mechanically predetermined result, or, to bring about a result predetermined in consciousness. Some, second, additional, different motion must be added to the motion of the material body such that the resultant of the two will cause the body to move in the required direction. And—this is the point—in order to effect the desired object, this second motion must be completely predetermined by consciousness and cannot be the mere mechanical resultant of previous material motions. If it had a purely mechanical origin it might go in the wrong direction, and the catastrophe would not be averted, or, the desired result would be missed. The second motion, which is designed to impart to the body a certain direction pre-chosen by consciousness, must be entirely determined in direction by that consciousness, and must therefore be an initial motion dating solely from that consciousness—originating solely in it,—and having no previous mechanical history. If its direction

is pre-determined by consciousness, then it is not pre-determined by mechanics, and it bears no relation whatever to any previous mechanical movements. If its direction is pre-determined by previous motions of matter, then it bears no relation to consciousness.

In this way consciousness could direct the movements of matter. And there is no conceivable other way.

This conclusion—the primary causation of material motion, that is of energy, by mind—is one against which leading scientists of strong anti-spiritualist prejudices have fought and struggled heroically. But it is a conclusion which is forced home—a conclusion from which there is no escape. Nowadays they are some of them beginning to admit that consciousness directs motion; but they try all sorts of maneuvers to show that this is possible without the origination of motion from any source outside the closed circle of mechanical cause and effect. But these efforts are futile. There is no standing ground between the two positions. If consciousness directs a motion, it does so by originating another motion. There is no other way. If consciousness cannot originate motion, then it does not direct motion. The scientist is thrown on to the horns of a dilemma. He must allow that consciousness can originate motion; or he must be satisfied with a purely mechanical explanation of the entire behavior of all conscious beings. There is no wriggling out of the position. And those scientists who have gone as far as to allow that consciousness does direct events, must go the rest of the way, and allow that consciousness originates motion; or, they must go back.

In using here the terms "mechanical energy" and "mechanical cause and effect," I do not of course mean to say that the energies of the human body which are directed by the conscious principle are simply mechanical like the energy of a billiard ball due to its motion across a table.

I merely mean to say that the problem of directing energy of any form whatever is essentially the same as the problem of imparting a given change of direction to the simple mechanical movement of any mass. Of course the simple mechanical motions of masses have in all cases their immediate cause in some form of physical energy, such as heat, light, electricity, gravity, or muscular, or nervous energy. But in every attempt to effect a given change of direction in the simple mechanical motion of a body without originating an independent motion, there is the same inherent absurdity, whether it is sought to make this change by direct action on the body whose mechanical motion is to be changed, or by introducing some change in the previous physical causes of that motion. By attempting its task further back among the previous physical causes which lead up to the motion which it is desired to change, the conscious principle may obtain a certain mechanical advantage. But the difficulty is one which it is essentially impossible to avoid entirely. It is inherent, and not to be avoided by any maneuvering.

There, in brief, is my challenge to the philosophical world. What I have to say now is merely in further explanation and illustration of my theory, and to round it off, and attempt to show its place in cosmical philosophy.

* * *

I said I would try and help the scientist to reconcile the origination of motion by mind with the theory of the conservation of energy. Well, this is my attempt.

There *is* something that offends the reason in the idea of force having any beginning at all—or in anything having a beginning. Creation out of nothing is an absurdity. In this case, however, force does not appear suddenly out of nothing, but out of consciousness. The truth must be then that force exists in the universe in two forms, viz.,

in association with consciousness and in association with matter. In the former form we have no measure of it at all, as it does not appear at all to our physical senses. But the reasonable inference that it exists, is, nevertheless, valid. When changing from the one form to the other, it would be manifest to our senses, but that it is so small in amount that no physical sense is delicate enough to perceive it. Here again our knowledge of its existence rests upon pure reason, but is not the less positive. This earth's store of energy measurable in foot-pounds is thus ever receiving additions. They may be so small as to make practically very little difference; but they are nevertheless real and definite.

The theory of the conservation of energy is therefore not wrong, but it requires re-modeling. The total amount of energy in the universe is constant, but it is also infinite. It exists in two forms, (1) spiritual, and (2) material, or mechanical; that is, measurable in terms of matter and motion. Reason shows that spiritual force is constantly passing into material force. But if the total quantity of each throughout the universe is infinite, then this incessant transformation will make no difference to either.

The total supply of spiritual force in the universe must be infinite; otherwise it would be liable to exhaustion. The total amount of material energy, too, is also probably infinite. For it seems unreasonable to suppose that the process of transformation ever had a beginning in time.

With regard to the conservation of material energy considered by itself, the old theory is right in the main, but it states a little more than there is warrant for. When altered as far as is necessary to reconcile it with psychical causation, it is reduced to this—not that material energy has no beginning and no end, but merely that it has no end. Once started it can never be lost. It is indestructible; but, though indestructible it may change form, whilst still re-

maining material energy. It may change from kinetic—energy that causes motion in matter, to potential—energy in equilibrium and resulting in stillness. And, what is more, when left alone it seems to have a natural tendency in this direction. And nothing but the interference of will-force can entirely defeat this tendency. The amount of will-force in the universe necessary to continue forever upsetting this tendency to equilibrium must be infinite. The conception of the conservation of energy which represents it as a perpetual motion machine is wrong. There is no such thing as a system in perpetual motion without perpetual interference from without. Motion in any system however large tends eventually to equilibrium. Even in an infinite system this would be so, if the system were purely mechanical; for there might, quite possibly, exist an infinite mass of matter in a state of equilibrium. And without interference from a realm outside of mechanics it is to that end that the mechanical motions of an infinite system would ever tend.*

* * *

Another circumstance which, with very many persons, tends to obscure the fundamental principle of voluntary action is that indirectness in the methods of consciousness, to which we have already referred. Consciousness always operates in the body, through a long chain of events. If it is simply a case of a limb to be moved, the initial motion is not imparted to the limb, nor yet to the muscles that work it. The energy stored up in the muscles of a man's arms and legs comes from the food that he eats. It is set free by something of the nature of an electric current, proceeding along his nerves to his muscles. The electric current is started by some molecular movement in his brain. And the molecular movement may be started by

* The main idea of this paragraph is taken from Professor Ward's Gifford Lectures and from an article by Heysinger in *The Monist* for July, 1904.

an atomic movement. But all that does not invalidate the proof of the existence of an independent will-force. Right back of the whole physical process—somewhere in the brain of the man—there must be an initial motion which is wholly predetermined in direction and velocity by the conscious principle. Otherwise there would be absolutely no guarantee that the ultimate movements would be in the direction forechosen by consciousness. It may be the motion of a certain molecule of the brain—or, of some submolecule—or, simpler even than that, of some atom—or, of a particle of the ether,—or, an electron, whatever that may be. But the initial motion must *be*.

Let it be clearly understood that I do not say that motions that are directed by consciousness must be originated by consciousness. But I do say, that in order to direct one motion, consciousness must originate another. It is sufficient to originate a motion very much smaller than the one to be directed. Consciousness acts as a spark to a train of gunpowder. In the gunpowder you have certain enormous forces in equilibrium, and therefore resulting in stillness. The spark contains a tiny amount of energy, just sufficient to upset the equilibrium when properly directed. And thus the enormous forces are let loose. The energy that releases the locked forces, may be ever so small, but it cannot be *nil*; it must be something definite in amount. To take another illustration: Imagine a mass of boulders, piled mountains high, reaching up out of the sea, and all just exactly in equilibrium. The slightest movement communicated by the surrounding air, the beat of a bird's wing flying over, or the mere sound of a voice—would be sufficient to upset the whole mountain, and send its boulders all thundering into the sea causing great waves sufficient to wreck ships. As a matter of fact, it is believed by mountain dwellers all over the world, that the sound of a voice is sufficient to start an avalanche on the

side of a snow-covered mountain. But in each case, the releasing energy, however small, is yet, of some definite magnitude.

I think perhaps the best analogy is found in the steam steering gear of an ocean liner, or a man-o'-war.* The touch of a babe's little finger might decide whether all the thousands of tons of matter and tons of explosives, and hundreds of human lives, are to go smoothly on their way, or hurtling to destruction. Suppose the engines to be of some ideally perfect pattern, such that they do everything for themselves, and every mechanism throughout the ship so perfect that the whole crew can be dispensed with—except the man at the wheel, and imagine him to be invisible—and you have something somewhat analogous to the mechanics of human action. Examine such a ship. Begin with the big limbs that do the main work of the body—the screw-propeller, and the machinery that drives it, and the power that moves the machinery. Throughout all, the mechanical connections, mechanical cause and effect—using the term mechanical in a wide sense to denote all material motion—are perfect. The power is traced to the coal that the engine eats and the water that it drinks—the pressure on the piston is experimentally proved, and the source of it ascertained—and the connection from piston to screw-propeller perfectly mapped out. But then we come to the steering gear. And here everything points to the control of big forces by smaller ones properly directed. The big rudder is seen to move and turn the ship. The rudder is seen to be controlled by machinery that is worked by an engine whose source of power is the same as that of the engine that works the propeller; but it is a much smaller engine. Then it, in its turn, is found to be controlled by other machinery, which leads us up at last to the

* I am indebted for the idea of this analogy to an article which appeared in *Indian Engineering* some time ago.

steering wheel, and that appears to move by some other source of power which we cannot find. And then it is seen how the faintest movement of that wheel changes the course of the whole ship one way or the other. We repeat this process experimentally ourselves—touch the wheel lightly with a finger and watch the great ship move in response—just as we might touch the cortex of the brain with an electric current, and watch a responsive movement in the body. But the source of the minute energy that moves the wheel eludes perception.

Then let the man at the wheel be visible; and let us examine him;—and in the end we are no nearer the thing sought for. Smaller in amount than even the energy in the finger that touches the wheel, is the energy originated by consciousness in the brain that directs the nerve that moves the muscle of the finger. And thus is man, the weakest of all animals, gaining the conquest of the world.

There is something magnificent in this spectacle of the power of the mind—the effects of the energy originated by consciousness—so tiny in amount, and so tremendous and far-reaching in result. We cannot see it, but we *know* by reason that it must be there,—the little *deus ex machina.* What an economy there is here. It is simply its smallness that has made scientists so persistently refuse to believe in it. The whole process *appears* to be mechanical. The infinitesimal stranger* that just makes all the difference, and without which the whole process would be impossible —escapes the ken of science. It reminds one somewhat of the action of a speck of impurity in zinc immersed in acid. The speck remains unchanged itself, but it is sufficient to start an electric current, which could not be produced if the zinc were perfectly pure. The speck disturbs the equilibrium.

* This expression and the analogy that follows are borrowed from another article in *Indian Engineering*, by a Mr. Ewbank.

The foregoing description of the methods of consciousness provides one example of the part played by unconscious material energy in the animal body. Under the direction of the mind, the material energy of the muscles does all the hard work; it is the *cooli* of the mental powers. But there are muscular and other material energies in the body which appear to have little or no connection with the mind at all—which appear to work away and produce important results without any mental control. I have already briefly alluded to some of these processes in the first part of my argument, under the general term "habit." To run to the assistance of a little child in great imminent danger, to lift the arm and duck the head to protect the latter from an imminent blow, to smoke a pipe, or to drink whiskey,—all of these are, or may become, habitual or instinctive actions. And there is a little more to be said on this subject of habit, to completely fit it in with the theory of will-force.

The attempt is constantly being made by more or less philosophic scientists with more or less of a bias towards the mechanical theory, to explain all animal action as habitual, and therefore mechanical,—instance Professor Huxley's famous experiment with the frog. I have shown that there are obstinate facts which entirely upset the mechanical theory as a complete explanation of animal actions. Yet I have not denied the existence of many actions which are entirely habitual, and which, as such, are very largely, if not entirely explicable from purely mechanical data. I merely said that notwithstanding the existence of these habitual actions in the body, there are undoubtedly a great number of other actions which cannot be explained in this way. But the fact of habitual action still remains, and the relation of such actions to the will-force has yet to be described—they must be given their position in the theory. It is not sufficient merely to

ignore them. If such a large part of our daily work can be done by habit, then why not all? Or, if consciousness has a part to play in some actions, then why not in all? Why should *both* methods be required in the animal body, the habitual and the voluntary? Then besides habitual actions there are reflex activities. These certainly appear to be entirely mechanical. In habitual actions consciousness is not wholly absent. It appears to look on without interfering, but keeping ready to interfere at any time if necessary. In reflex action consciousness is wholly absent. Yet it is interesting to observe that consciousness *can* interfere if it chooses in some of the most important reflex actions of the body and in some persons more than in others.

The theory that connects consciousness with habit and reflex action is really pretty well known. But its importance is not apparent until the role played by consciousness comes to be recognized. A brief recapitulation of what is well known, is all that I need give here.

It is a matter of common observation that habitual actions grow out of actions performed by conscious effort. In learning to play a difficult musical instrument, such as the piano or violin, the closest and most persistent mental application and intent concentration of purpose are necessary to the beginner. But as the particular portion of the brain concerned, and the nerves and muscles all get educated up to their work, the process becomes easier and easier—the amount of conscious application becomes less and less—the physiological activities become more and more mechanical, and consciousness comes more and more to the position of a critical spectator looking on and ready to interfere at a moment's notice if anything goes wrong in the machinery. At last, in well-learned compositions, the performer will be able to talk of other subjects, and

play at the same time—but should he make a mistake, he will notice it at once and correct it.

Instinct is but habit intensified by ages of heredity. Yet, in the instincts of animals we see evidence that the connection with consciousness is still kept up, in the way individual animals sometimes introduce slight variations into their instinctive actions of their own will—generally to adapt themselves to some peculiarity in their surroundings—sometimes apparently out of pure whim.

Reasoning by analogy it is not inconceivable that reflex action may have grown out of habitual action by becoming fixed and intensified through a long process of mechanical repetition, both in the individual, and—through heredity—in the species, without any occasion for interference from consciousness. Yet at this day we do find that the action of the bowels, and the lungs, and—in some people—the heart also can be controlled by the will.

In the formation of habits we see the conscious principle at work building up its own body—constructing its own machinery for the carrying out of its own desires and plans. And it proceeds on exactly the same lines as the mechanical inventor, whose aim is ever to get more and more work done mechanically, so as to save labor—so as to save the trouble of conscious interference, and thus to set the conscious agent free, for general direction and supervision, and for other work.

* * *

It will be fitting here to conclude with a brief statement of two main results of the theory of will-force.

1. If force originates in consciousness, then, is not consciousness, as an origin, itself elementary? The argument that force is inherent in matter does not hold good here. We are confronted with an exception from which there is no escape. All force that is bound up in matter

is found to act in an invariable manner according to certain fixed laws, which are such that given certain preliminary measurements of the forces and masses concerned, the direction and strength of the succeeding movements in the system can be precisely foretold. But in the case of consciously directed motion, we have a force whose direction depends solely upon consciousness and is essentially absolutely independent of the direction and strength of any previously operating forces. It is the inherent nature of this force that in direction it is quite independent of any previous material or dynamic factors. It originates solely in consciousness. It is originally something quite apart from matter. It afterwards enters into matter; and, once there, there it stays for ever—merely moving from matter to matter. But it it did not begin in matter. It began in consciousness solely. What is this but to say that consciousness is a distinct element in the cosmos equally with matter?

There is some difficulty in conceiving of the origin of force in consciousness, just as there is difficulty in conceiving of its origin in matter; because, just as matter and force are abstractions of different orders, so are consciousness and force. Consciousness essentially—ontologically—is simply awareness. Force is quite a different concept. But, if the validity of the foregoing arguments is accepted, then this difficulty must be accepted likewise. The statement of the case on the lines of the spiritualist hypothesis is this: Spirit is a trinity of three attributes, (1) knowledge, or consciousness, or awareness, (2) will, (3) emotion. In terms of this conception, then, we should say, not that consciousness originates motion in matter, but that spirit originates motion in matter. As force exists in matter and yet is not matter; so it exists in spirit and yet is not spirit. These different ontological entities that make up the universe, are bound together in a certain order.

They have certain fixed relations one to another. That is all we are able at present to say. Time, space, matter, spirit, force, and in spirit we have three bound together in certain fixed relations of their own, viz., knowledge, will, and emotion. In this system of philosophy, it would be as well to restrict the term energy to that form of force which it assumes when united with matter.

We have no means at present of reducing the number of these elements. And we must not allow too strong an *a priori* bias in favor of simplification, and an absolutely unitary conception of the universe, to betray us into enforcing simplification, where the facts of experience and the legitimate inferences of pure reason are against it. After all, where there is order, there there is monism, there there is harmony. The very existence of order implies the existence of differing elements; and the eager attempt to reduce everything to one is an extreme tendency of certain minds unwarranted by facts. It is the false philosophy stigmatized by the editor of *The Monist*, under the name—Henism.*

The theory of will-force makes a difference to the whole process of evolution.

Evolution is now no longer a purely physical process, an affair of matter and energy. In the animal kingdom, in every organism undergoing evolution, the conscious entity is at work. The change in the structure of the organism is not due solely to the action of its environment. It is assisted, sometimes at any rate, by the effort of the conscious entity in the organism, to operate on its own environment, or on its own body, for its own purposes. The swiftest deer escape the tiger, and give birth to other deer that inherit their swiftness, while the slower ones are devoured. And so the deer tribe become swift of foot.

* I am aware that Dr. Paul Carus would be equally opposed to my notion of an Ordered Pluralism.

But it is evident how greatly this result must be helped on by the conscious effort of the deer to run as fast as he can. He uses his muscles to the very best advantage, and by use develops them. Thus the conscious entity in the deer, to some extent, builds its own body. And this reminds one, by the way, of the great stress that Professor Sandow lays on the putting of the will into the working of the particular muscle to be developed — the concentration of thought on that muscle. The deer cannot do this, because he has no knowledge of anatomy. But he works on the same principle as far as he is able.*

It seems likely that evolution proceeding on these lines will not require the enormous periods of time otherwise necessary to produce its results. A second, and totally distinct force, has been introduced as a factor in the process.

Evolution under guidance, is the theory invented as a compromise between religion and science. We see now how the guidance is introduced. It is introduced in the conscious efforts of the organisms undergoing evolution. The spiritual force in each, it is only reasonable to suppose, is derived from an infinite source pervading the whole universe. But it is in the conscious effort of the individual organism that we discover its working.

From this we may, cautiously, advance another step. If individual will-force is derived from an infinite universal source, then, reasoning by analogy, it is natural to infer that the universal will-force is employed in the grand affairs of the universe in the same manner as individual will-force is employed in the smaller affairs of animals and men—that universal evolution also is under guidance. Thus, from the individual will, we advance to the idea of God. This is not strict argument. But it is a reasonable

* This psychical process of body-building appears in its physical aspect as development by use.

hypothesis which serves the purpose of providing a place in universal philosophy for the proved truth of individual will-force.

There is, perhaps, a rather stricter argument which leads to the same conclusion. If some material energy originates in will-force, then it is a legitimate inference that all material energy has this origin. It would be a superfluous unnecessary assumption to suppose that we had two distinct kinds of material energy in the world, one derived from will-force, and one without any origin outside of itself. Once will-force is transformed into material energy, there is essentially nothing to differentiate it from other material energy—it has become the same thing. So it is obvious that we have but one kind of material energy in the universe. Then, as we find that there are provable instances of the origination of that material energy in will-force, and as this material energy is all of one kind, therefore it is an inevitable inference that all material energy has this origin. Therefore the whole universe must be pervaded by will-force. This universal will-force is one aspect of God, Brahma, the Universal Spirit.

This is not to say that the process of transformation from will-force to energy ever had a beginning in time To argue , that as all material energy has had an origin in will-force, therefore there must have been a time when there was no material energy—when all energy was spiritual—would be unwarranted. *Because,* the amount of material energy in the universe may be infinite. It seems natural to suppose that it is. And if so, then the process has been going on forever.

W. E. Ayton Wilkinson.

Burma, India.